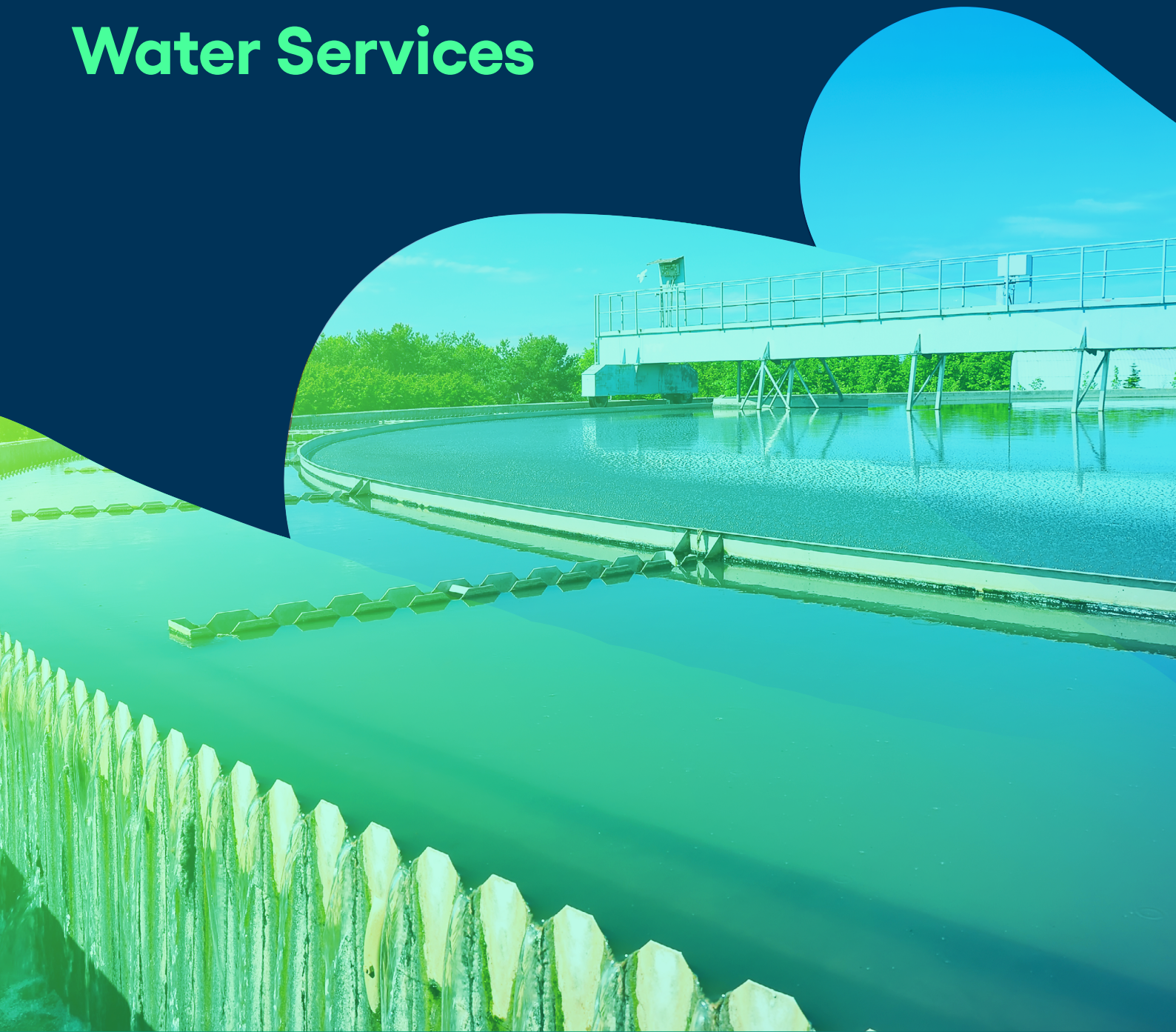


Empowering New Zealand Councils to Deliver Safe, Reliable, and Sustainable Water Services



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Introduction

Managing what matters most

Managing vast infrastructure networks – roads, rail, poles and pipes – is one of the most complex responsibilities facing asset managers. As part of larger interconnected systems, a failure in one area can quickly ripple across others, making them essential to monitor and maintain, metre by metre.

And yet, the most challenging networks are often the ones you can't see. Water infrastructure is not only buried underground – it's also aging and for some regions, nearing the end of its useful life.

In New Zealand, decades of underinvestment, combined with the fact that much of the network was built between the 1950s – 70s using asbestos cement and reinforced concrete pipes, mean many councils are facing frequent bursts, pressure drops, and rising contamination risks.

While the current network is valued at \$40–50 billion, the investment needed over the next 30 years to upgrade New Zealand's water infrastructure is estimated at a staggering \$120–185 billion. For many of New Zealand's 67 councils, especially smaller and rural ones, the cost of improving water quality and meeting new regulations is unaffordable, with spending needing to double or more to meet the required standards.

While councils and utilities decide how to tackle the problem, New Zealand citizens are already feeling the impact, with regular boiling water alerts, water restrictions in summer, and nighttime surges that lead to main breaks.

Pipes buried underground may be out of sight, but they're not out of mind. Communities expect safe, reliable drinking water, and rightly so: the United Nations recognises access to clean water as a basic human right. It's also a key driver of public health and economic wellbeing. According to the World Health Organisation, every dollar invested in water and sanitation delivers four times the value through reduced healthcare costs and improved outcomes.

This guide explores how New Zealand councils can take back control of their water infrastructure with integrated asset management, predictive planning, and smart monitoring – ensuring the right investments are made at the right time to deliver safer, more sustainable water services for their communities.

New Zealand's water challenges

How can asset managers close the investment gap efficiently, affordably, and sustainably to address the challenges of New Zealand's aging water infrastructure?

A major part of the problem is New Zealand's leaking water systems, which not only pose risks to public health but also waste considerable public funds.

Non-revenue water (NRW) refers to water that has been treated but is lost or unaccounted for before it reaches paying customers. This includes losses due to leaks, theft, or inaccurate metering, but excludes uses such as toilet flushing or irrigation.

Currently, about 133 million cubic metres of water is lost each year – roughly 22% of total supply worth around \$122 million each year. These losses come at a cost: wasted treatment, wasted energy, and wasted budget – all of which feed into higher charges for consumers.

Source water contamination is another big challenge, made worse by New Zealand's high livestock-to-human ratio. During periods of heavy rain and flooding, animal waste can be washed into water sources, placing strain on aging treatment plants and triggering boil water notices in some regions.

Another issue is competing priorities and limited funding. Councils must balance spending across a wide range of community assets, such as parks, roads and libraries, many of which offer more visible benefits than underground water assets. As a result, investment in water assets is often deprioritised, despite its critical role in community health.

When taken together, these issues make the task of managing New Zealand's water infrastructure feel overwhelming. But the solution isn't to replace everything all at once. Instead, it lies in working smarter – knowing where to begin, what to prioritise, and how to extract the most value from every dollar spent.

Modernising water asset management

To build more resilient water systems, New Zealand councils and utilities must move away from reactive, crisis-driven decision-making and adopt a more strategic, data-informed approach – one that prioritises sustainability and long-term value over short-term fixes.

This requires councils being able to access up-to-date information, such as location, condition and maintenance history. However, many councils are still managing their water infrastructure using outdated methods, with information scattered across different systems – making it difficult to make sense of and act upon.

According to Water NZ's 2021 National Performance Review, around 30% of water authorities lack a comprehensive digital asset management system. This has resulted in many councils having fragmented data, inconsistent practices, and a reactive approach to maintenance that no longer meets current needs.



133 million

cubic meters of water lost per year



22%

total water supply lost per year



\$122 million

value of water lost each year

This fragmentation often takes the form of spreadsheets, paper records filed away in different locations, or siloed departments each using their own legacy software.

As a result, maintenance crews often lack real-time access to asset histories. This can lead to duplicated work, poor decisions in the field, and inconsistent data across systems. Valuable time is then wasted piecing information together, driving up operational costs and increasing the risk of emergency repairs.

This lack of visibility also limits a council's ability to justify budget requests or forecast future needs. Without accurate, centralised data, it's hard to track total asset costs, plan renewals, or meet new compliance requirements.

The Government's **Local Water Done Well** program (which replaced the earlier Three Waters Reform in 2024) has highlighted just how varied asset management practices are across the country. Many utilities continue to operate with low levels of digital maturity and limited system integration – gaps that make it difficult to meet regulatory expectations or plan long-term.

As regulatory expectations grow – particularly under Local Water Done Well, which calls for stronger accountability, environmental stewardship and financial transparency – modernising asset management is no longer optional. Councils need a strong digital foundation to deliver safe, reliable and sustainable water services into the future.



Building a reliable foundation

The mounting challenges facing NZ water authorities is driving demand for modern, end-to-end Enterprise Asset Management (EAM) systems that offer better asset visibility, smarter use of public funds, and improved compliance with evolving regulatory standards.

EAM systems streamline information related to assets to help councils understand their costs and asset performance over time, helping councils to operate, plan and manage their water infrastructure more effectively. Implementing an EAM system all starts with getting the basics right: ensuring that foundational data is consistent, useful and all in one place.



Benefits of an EAM system



1. One source of truth

A reliable, complete asset register underpins every infrastructure decision. With one central system, councils can track condition, criticality and performance in real time – eliminating fragmented data and helping teams see the full picture for better, faster decisions. For example, easily accessing condition data from a

central repository helps schedule water main renewals and reduce the cost and frequency of emergency repairs. This becomes ever more important when councils are forming regional CCOs (Council Controlled Organisations) for water service delivery.



2. Clearer communication

During incidents or emergencies, such as flooding or water main breaks, real-time alerts and location data help teams coordinate quickly. Field crews know where to go and what to do, while managers can provide updates across departments and to the public.



3. Proactive maintenance

Instead of reacting to failures, EAM uses historical and real-time data to predict them. Councils can intervene early – fixing small leaks before they become major ones. That means fewer emergency repairs, reduced costs, and more reliable service delivery.



4. Real-time awareness

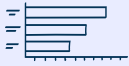
Smart sensors and IoT devices act as the eyes and ears of your asset management system, providing real-time insight into asset performance. This combination allows immediate alerts to potential issues, such as early leak detection - automating maintenance triggers and providing the data foundation needed for treated predictive asset management.

Benefits of an EAM system



5. On-the-go access

Mobile apps allow crews to update records, view asset histories, and log maintenance tasks in the field – cutting admin time and boosting response speed.



6. Data-driven decision-making

From system performance and team outputs to budgets and risk, EAM gives leaders the insights needed for smarter planning and better resource allocation. It helps councils build a stronger case for funding, backed by real data. For example, EAM can help managers predict renewals to help prevent supply disruptions, or identify assets vulnerable to flood damage before an event for better emergency planning and faster recovery.



7. Staying compliant

With tools that track asset condition and automate reporting, water authorities can better navigate the Local Water Done Well regulatory requirements by maintaining detailed digital records of asset condition and providing real-time compliance monitoring.



8. Managing risk

Integrated systems make it easier to align asset performance with risk frameworks, enabling councils to demonstrate their commitment to safer drinking water, environmental protection and efficient service delivery.

Don't digitise data for the sake of it

With more software tools than ever for digitising records, it's tempting to start scanning everything. But the first question councils should ask is: Do we really need this data? Sometimes, old records are collected with no clear purpose, and much of that data may be therefore outdated or irrelevant.

If the data is important, then the next step is making it accessible and usable by digitising it into formats like PDFs or Word docs, and ultimately integrated into your asset management platform. Start by identifying what's missing, where gaps exist, and where critical data is locked away.

Brightly can collaborate with you throughout this process, guiding you on how to digitise and centralise your data efficiently.

Planning with confidence

Having good practices and a centralised system for keeping and updating data gives you a lot more confidence in your data – which, in turn, gives you a lot more confidence in your planning.

The multi-billion dollar gap in network investment may in itself be daunting, but that's only half the picture. With many pipes nearing the end of their life at the same time, councils face a massive wave of renewals. There isn't enough money to fix everything at once. So how do councils know where to start?

The key is shifting from reactive, condition-only decisions to risk-based planning. That means looking beneath the surface of the wave and understanding the real-world consequences of failure, rather than basing renewal decisions on physical condition alone.

Not all assets carry equal risk, even if they appear to be in the same condition. Strategic asset management (SAM) helps you identify what matters most. Some of the risks to consider when weighing up maintenance and investment decisions include:



Contamination risk: From asbestos fibres or animal waste, especially in flood-prone areas.



Economic cost: Not just to acquire, dispose and renew assets, but also in terms of leaked water.



Environmental resilience: Ageing pipes can worsen the impact of extreme weather events.



Reactive repairs: Costly, disruptive, and damaging to public trust.



Fire risk: Leaks can reduce network pressure and impair firefighting capacity.



Community trust: Poor service delivery erodes public confidence.



Tourism impacts: Trust also impacts tourism, a major contributor to New Zealand's economy.

By understanding these downstream impacts, councils can move beyond a one-size-fits-all approach and start making evidence-based, conscious decisions. SAM helps identify which assets offer the greatest return on intervention and which risks can be managed or deferred.

When assessing asset condition beyond their physical appearance, remember:

1. There are far more downstream impacts than meets the eye – and many are not immediately tangible the deeper we look.
2. Not all of these impacts are equal for all assets. In other words, not all assets are valued the same. The same pipe in the same condition might hold more or less risk depending on its location in the network and the purpose that it serves.
3. To confidently prioritise renewals, councils must dive underneath the surface to understand the risks, impacts and costs that aren't immediately tangible across the entire lifecycle of assets.

Case Study

Wannon Water uncovered \$3 million in capital savings across a 10-year renewal plan just by refining its planning approach. That's money it can now confidently reinvest in other areas.

[Read the Case Study →](#)

The logo for Wannon Water, featuring a stylized white wave graphic above the text "wannonwater" in a lowercase, sans-serif font.

Maximising value across the asset lifecycle

How do asset managers maximise the value of assets over their lifecycle? And what does this value look like?

Over time, as assets degrade, so do their service levels. Meanwhile, the cost of maintenance increases, along with the likelihood of failure, which can increase the risks lurking beneath the surface.

The best way to maximise an asset's value across its lifecycle is to explore the different possibilities of the future to find the 'sweet spot' of spending – the point where services are maintained without overspending to the point of diminishing returns.

This is at the core of strategic asset management. It's about making conscious, evidence-based decisions grounded in an understanding of potential downstream impacts.

Strategic planning lets you weigh different "what-if" scenarios. What happens if funding is reduced? If priorities shift? If another major asset fails? These trade-offs must be understood – and accepted – so councils can choose the best path forward.

Strategic Asset Management (SAM) helps councils understand different versions of the future, consciously pick the most appropriate one, and take a deliberate path forward.

Once a direction is chosen, the next step is being able to defend your plan with confidence. After considering the full range of future possibilities, SAM enables you to back your decisions with data-based evidence. This enables you to tell your asset stories in a compelling way that will unite your stakeholders around the strategy and bring them along on the journey.



Making decisions with imperfect data

Many councils rely on outdated or inconsistent data – especially for underground assets. In some cases, there is little data at all besides the install date. The good news is: you don't need perfect data to start planning.

Not all data is equally valuable. You might find you're collecting 20 data elements across all of your asset classes, but when it comes time to planning, only six of those elements truly move the needle in terms of what decisions need to be made.

This gives you a way to assess the value of your data:

- **Keep collecting the data that proves valuable.**
- **Reduce collection of data that sees little use in decision-making.**
- **Identify data you're not collecting that would be valuable and build a business case to invest in it.**

To begin planning, simulate asset degradation starting from the point where you have data. If no current data is available, use the install date as a baseline and simulate its degradation up to the present. This brings all assets to the same point in time, creating a common baseline.

Once on the same baseline, it becomes far easier to look forward with accuracy – revealing the differences in how assets are valued, and helping guide smarter investment decisions.

Leveraging technology to combat non-revenue water

Every year, New Zealand loses a considerable amount of water through leaks – enough to meet the consumption needs of 1.6 million people, or around a third of the country's population.

That's a huge volume of expensively treated water going to waste, with major financial implications. But beyond the immediate financial costs, NRW is increasingly a sustainability concern, threatening long-term water security in the context of climate change and growing urbanisation. It also makes meeting regulatory compliance more difficult.

This is why addressing non-revenue water is a key part of meeting the objectives set out in the Water Done Well framework. However, tackling NRW is complex and costly, particularly when scaling solutions across an entire network. It requires upfront investment, skilled labour, and time.

Fortunately, advances in technology such as AI, cloud computing, standardised interfaces, and lower communication costs are shifting the economics of leakage management, making it more viable and cost effective to address NRW at scale.

Using these technologies, Siemens offers two key solutions to help tackle the challenges of NRW:

SIWA Leak Finder

Used to address physical leakages in water distribution networks

SIWA Meter Management

Used to address commercial losses caused by illegal connections or inaccuracies in metering and billing.

About the SIWA Leak Finder

SIWA Leak Finder leverages existing data from the water network – including flow meters, pressure sensors, and tank level data – as well as data from both smart and conventional meters. It can also integrate GIS data and hydraulic models where available.

All of this data is fed into an AI engine, which can run either in the cloud or on-premise. The system is capable of detecting and localising not only leakages, but up to 15 other types of network events, such as pressure drops, sensor faults, and asset failures.

When integrated with a hydraulic model, the system also supports planning activities – allowing you to simulate operational or investment scenarios to decide where to focus limited resources for the greatest impact.

Working across small to large District Metered Areas

Water networks are typically divided into District Metered Areas (DMAs). SIWA Leak Finder works effectively across both small and large DMAs.

For small DMAs – those with less than 20 km of pipe – a single flow meter at the DMA inlet is often sufficient for the AI to detect leakages at the DMA level.

For larger DMAs, greater granularity is needed. This is where hydraulic models and additional flow meters within the DMA become essential. The AI can then localise leaks down to the pipe level – within a zone as small as 200 metres – and detect leak sizes as small as 0.25 litres per second.

The key question becomes: how many flow meters are needed, and where should they be installed to achieve the desired level of accuracy? This is where AI and hydraulic modelling come into play.

Imagine a large DMA zone with two inlet flow meters. By combining a hydraulic model of the network with AI, you can simulate virtual leaks and test different sensor placements within the zone. This helps determine the optimal number and placement of additional flow meters.

The more meters you place, the smaller the detection zone becomes. This approach lets you determine, in advance, how many flow meters are needed and where they should be installed to meet your target accuracy – before committing to any capital investment.

Where to begin using AI in water networks

A good starting point for implementing AI in water distribution networks, and demonstrating early value, is at the DMA level. For this, you only need a single flow meter at the DMA inlet.

From there, you can use AI to detect leakages at the DMA level and generate a heat map showing leak-prone areas within your water distribution network. This allows you to identify zones with high leakage rates and begin investigating those areas.

You might start by developing a hydraulic model or installing additional flow meters within that section to test the technology and understand how it works – then take a stepwise approach to scaling across the wider network.

Even with a small number of flow meters, the AI can begin identifying a range of network events – not just leakages, but also sensor faults, asset failures, and pressure anomalies. These early insights can deliver value straight away.

As you build out the solution, the system can begin to localise events and leakages to within a 200-metre area and also detect leakage rates as low as 0.25 L/secs.

Prioritising pipe replacements with AI

Siemens also offers an asset management functionality that helps councils assess pipe risk based on factors such as material, age, pressure, and failure history. This enables you to prioritise which pipes need replacement.

If you have a hydraulic model, you can also assess how many people would be affected if a particular pipe were to fail. By combining this criticality data with pipe risk, you can prioritise replacements to maximise the value of your investment. For a given budget, this approach ensures you're replacing the right pipes at the right time.

Case Study



Swedish water company VASYS uses SIWA Leak Finder to detect leaks in water pipelines as small as 0.5 litres per second using AI, bringing its volume of NRW from 10% down to less than 8%.

[Read the Case Study →](#)

Conclusion

Turning the tide on New Zealand's water infrastructure

New Zealand's water infrastructure challenges are immense: aging networks, funding shortfalls, compliance pressures, and climate threats. But with the right tools, strategies, and mindset, councils can take back control.

Backed by the global scale and innovation of Siemens, Brightly Software offers a comprehensive solution that transforms fragmented, outdated systems into a unified digital platform. We support real-time asset monitoring, streamline compliance with Local Water Done Well, and enhance communication during critical events. Most importantly, we help councils optimise resource management and build the digital foundations needed for sustainable water infrastructure management.

Councils and water asset managers must move beyond traditional age-and-condition based planning to a more holistic and preventative evidence-based planning. That means considering risk, sustainability, cost, and community outcomes underneath the 'renewal wave' to understand how to prioritise asset investments. SAM enables us to model all possible versions of the future, so you can consciously design the path ahead.

To meet regulatory obligations and future-proof our networks, we must embrace modern technologies, including AI. Tools like Siemens' SIWA Leak Finder and Meter Management solution make it possible to detect leaks earlier, reduce NRW, and manage precious water resources wisely.

With the right strategy and technology in place, New Zealand councils can deliver safe, reliable, and sustainable water services for generations to come.



About Brightly Software

Brightly Software, a Siemens company, enables organisations to manage the entire lifecycle of their assets, facilities and infrastructure. As the global leader in intelligent asset management solutions for more than 25 years, Brightly's sophisticated cloud-based platform is expertly designed to improve capital planning through smarter, data-driven decision making, empower technicians to predict, prioritise and manage preventative maintenance activities, and support organisations to achieve sustainability, compliance and efficiency goals. Combined with award-winning training, legendary support and managed services, more than 12,000 clients worldwide depend on Brightly to optimise their teams, operations and strategic planning initiatives. For more information, visit brightlysoftware.com

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